

We claim:

1. An etching solution, consisting essentially of combining hydrofluoric acid and hydrogen peroxide in water.

5 2. The etching solution of claim 1 wherein said hydrofluoric acid has a concentration of 49%.

3. The etching solution of claim 1 wherein said hydrogen peroxide has a concentration of 29%-30%.

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4. The etching solution of claim 1 wherein a volume ratio of hydrofluoric acid: hydrogen peroxide: water is 2:1:21.

5. The etching solution of claim 1 wherein said etching  
15 solution is used at room temperature.

6. The etching solution of claim 1 wherein said etching solution is used at temperatures from 40°C to 50°C.

7. A solution for etching TaN during semiconductor device processing, consisting essentially of combining HF with a concentration of 49% with H<sub>2</sub>O<sub>2</sub> with a concentration of 29%-30% in deionized water.

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8. The solution of claim 7 wherein said solution has a volume ratio greater than 1:1:20 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

9. The solution of claim 7 wherein said solution has a  
10 volume ratio of 2:1:21 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

10. The solution of claim 7 wherein said solution has a volume ratio of 3:2:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

11. The solution of claim 7 wherein said solution has a  
15 volume ratio of 3:1:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

12. The solution of claim 7 wherein said solution is used at room temperature.

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13. The solution of claim 7 wherein said solution is used at temperatures from 40°C to 50°C.

14. A solution for etching one or more of the following:  
TaN, TiN, Cu, FSG, TEOS, and SiN in silicon device  
processing, consisting essentially of combining HF with a  
concentration of 49% with H<sub>2</sub>O<sub>2</sub> with a concentration of 29%-  
5 30% in deionized water at room temperature.

15. The solution of claim 14 wherein said solution has a  
volume ratio of 2:1:21 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

10 16. The solution of claim 14 wherein said solution has a  
volume ratio of 3:2:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

17. The solution of claim 14 wherein said solution has a  
volume ratio of 3:1:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

18. A solution for etching TaN, TiN, Cu, FSG, TEOS, and SiN  
in silicon device processing, consisting essentially of  
combining HF with a concentration of 49% with H<sub>2</sub>O<sub>2</sub> with a  
concentration of 29%-30% in deionized water from 40°C to  
5 50°C.

19. The solution of claim 18 wherein said solution has a  
volume ratio of 2:1:21 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

10 20. The solution of claim 18 wherein said solution has a  
volume ratio of 3:2:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

21. The solution of claim 18 wherein said solution has a  
volume ratio of 3:1:10 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

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22. A method for etching one or more of the following: TaN, TiN, Cu, FSG, TEOS, and SiN from a semiconductor body in semiconductor device processing, comprising:

5        forming a solution by combining HF with a concentration of 49% with H<sub>2</sub>O<sub>2</sub> with a concentration of 29%-30% in deionized water; and

         applying said solution to said semiconductor body with  
10    said solution being at room temperature.

23. The method of claim 22 wherein said forming a solution further comprises using a volume ratio greater than 1:1:20 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

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24. The method of claim 22 wherein said forming a solution further comprises using a volume ratio of 2:1:21 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

20    25. The method of claim 22 wherein said method further comprises applying said solution in the presence of photoresist.

26. A method for etching one or more of the following: TaN, TiN, Cu, FSG, TEOS, and SiN from a semiconductor body in semiconductor device processing, comprising:

5       forming a solution by combining HF with a concentration of 49% with H<sub>2</sub>O<sub>2</sub> with a concentration of 29%-30% in deionized water; and

      applying said solution to said semiconductor body with  
10   said solution being at a temperature of 40°C to 50°C.

27. The method of claim 26 wherein said forming a solution further comprises using a volume ratio greater than 1:1:20 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

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28. The method of claim 26 wherein said forming a solution further comprises using a volume ratio of 2:1:21 of HF:H<sub>2</sub>O<sub>2</sub>:deionized water.

20   29. The method of claim 26 wherein said method further comprises applying said solution in the presence of photoresist.